

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554**

In the Matter of)	
)	
Updating the Commission’s Rule for Over-the-Air Reception Devices)	WT Docket No. 19-71
)	
)	

COMMENTS OF STARRY, INC.

Starry, Inc. (Starry)¹ submits these comments in strong support of the Federal Communications Commission’s (FCC or Commission) proposal² to modernize and update its rules regarding over-the-air reception devices (OTARD) to reflect changes in fixed wireless technology and improve broadband connectivity and competition in urban, suburban, and rural communities across the United States. Fixed wireless can provide a last mile broadband connection at much lower cost than comparable wireline networks, and with significantly less disruption to the cities, towns, and communities in which they are deployed. Nonetheless, fixed wireless operators continue to face barriers to deployment. By modernizing OTARD to apply to any fixed wireless antenna that meets the current size requirements, the proposed rule changes can significantly reduce the construction timelines for new fixed wireless sites.

Updating and modernizing OTARD will also empower property owners to help improve broadband connectivity and competition in their own communities – whether in a single-family home development or a multiple dwelling unit. Property owners will be able to choose to make their property part of the fixed wireless infrastructure ecosystem, which will improve theirs and their neighbors’ access to competitive broadband services.

The proposed rule change is balanced approach to help streamline the siting process for fixed wireless networks – which have a minimal impact on the surrounding community – while

¹ Starry, Inc., is a Boston- and New York-based technology company that is utilizing millimeter waves to re-imagine last-mile broadband access as an alternative to fixed wireline broadband. Starry is currently deploying its proprietary fixed 5G wireless technology in the Boston, Washington, DC, Los Angeles, New York City, and Denver areas, with plans to expand to our presence to additional U.S. cities through 2019.

² *Updating the Commission’s Rule for Over-the-Air Reception Devices*, WT Docket No. 19-71, Notice of Proposed Rulemaking, FCC No. 19-36, (rel. Apr. 12, 2019) (*NPRM*).

respecting the rights of state and local governments and home owners' associations to adopt reasonable restrictions to achieve a public safety objective or preserve historic properties.

We strongly urge the Commission to adopt its minor proposed rule change to modernize OTARD to improve fixed broadband connectivity, and increase broadband competition and choice across the country.

I. ENHANCING AND MODERNIZING OTARD WILL SIGNIFICANTLY REDUCE BARRIERS TO DEPLOYING FIXED WIRELESS NETWORKS

Fixed wireless networks are a critical part of the U.S. broadband infrastructure. Because of improvements in fixed wireless technology – including the advent of 5G – and the availability of spectrum with lower-barriers to access,³ fixed wireless has continued its growth as a low-cost and highly-effective way to provide broadband access to homes across the U.S. Unfortunately, for reasons discussed below, fixed wireless operators face unique challenges in constructing their networks, including continued barriers to siting at the local level, even for sites that should otherwise be approved under Section 6409.⁴

A. Fixed Wireless Plays a Critical Role in the Nation's Broadband Infrastructure by Connecting Unserved and Underserved Communities

Fixed wireless providers operate across every type of community in the U.S. They provide the only broadband connection in rural America where the incumbent local exchange carrier is not expanding its network or upgrading its technology, and where cable never arrived. They provide a competitive alternative in suburban areas where the local cable provider is the only choice for broadband. And they provide new competition and connectivity in urban areas of the country, where on a building-by-building basis broadband competition is still weak, and lower-income areas frequently have poor or no connectivity.

Fixed wireless can serve this role because of 1) improvements in technology, 2) lower capex to deploy a last-mile connection relative to fixed line networks, and 3) motivated local operators who want to improve broadband access to benefit their own communities. Many wireless internet service providers (WISPs) have very similar and inspiring origin stories. It's not unusual to learn that a WISP was started by an individual or group in a local community

³ See, e.g., *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services; Amendment of Parts 1, 22, 24, 27, 74, 80, 90, 95, and 101 To Establish Uniform License Renewal, Discontinuance of Operation, and Geographic Partitioning and Spectrum Disaggregation Rules and Policies for Certain Wireless Radio Services*, Third Report and Order, Memorandum Opinion and Order, and Third Further Notice of Proposed Rulemaking, GN Docket No. 14-177, 33 FCC Rcd 5576 (2018); *Promoting Investment in the 3550-3700 MHz Band*, WT Docket No. 17-258, Report and Order, 33 FCC Rcd 10598 (2018).

⁴ 47 U.S.C. § 1455.

frustrated by the lack of broadband availability, who take it upon themselves to invest their own time and resources into building out an alternative provider, even in the face of major difficulties. That entrepreneurial, community-minded spirit is largely what defines most fixed wireless operators.

Starry was founded on a similar set of frustrations, but with a nationwide vision. In 2014, the founders surveyed the broadband market and recognized an opportunity to leverage their engineering expertise and access to financing to build an entirely new fixed wireless ecosystem and nationwide provider from the ground up. The team developed its own millimeter wave fixed wireless equipment and set out to deploy a network in dozens of cities across the country. Since forming, Starry has grown to over 500 employees, has developed two generations of advanced millimeter wave technology (base stations, transceivers, and in home WiFi access points), and has deployed an active network in Boston, Los Angeles, D.C., Denver, and New York City.

Starry's technology and economics make it a very viable new entrant in relatively dense markets, at least to start. Starry is currently able to offer a gigabit-capable service at a passing cost of under \$20 per home passed – this is compared to approximately \$1,500 for a fiber network. Starry is entering markets, neighborhoods, and buildings with one or more incumbent, and offering a high-quality, consumer-focused, affordable alternative. Starry does not bundle broadband with other services, subscribers are charged a flat price (WiFi access point included), long-term contracts are not required, there are no data caps, and Starry prides itself on great customer service and care.⁵ Starry works directly with building owners to bring our service to their buildings, and building owners recognize that consumers want and deserve choice, even where they may have one or two existing options.⁶

Starry also leverages its technology and economics to bring true broadband connectivity to unconnected urban communities through Starry Connect, a program offering free or low-cost service to public and affordable housing.⁷ Starry Connect is provided in partnership with building owners and local authorities, and offers either a connection where one does not exist, or a true competitive broadband connection at a low-price without complicated eligibility

⁵ See <https://starry.com>.

⁶ Starry recently conducted a survey of its subscribers, and found that half of the respondents consider internet service provider options when deciding where to live. See *Internet Choice Drives Rental Decisions*, Starry The Download Blog, <https://starry.com/blog/news/internet-choice-drives-rental-decisions> (May 30, 2019).

⁷ See <https://starry.com/starryconnect>.

requirements. In order to subscribe to Starry Connect, a subscriber just needs to live in a building that has the service – that’s it. And residents in these buildings are able to subscribe to a 30 Mbps symmetrical service for only \$15 per month, with no data caps, long-term contracts, or extra fees.

Like all fixed wireless operators, Starry’s ability to succeed is directly tied to its ability to deploy transmitters at specific locations within a reasonable period of time. Starry endeavors to work collaboratively with local governments to bring competitive service to their communities, and has had many positive experiences working with local officials. However, for a variety of reasons – including a lack of resources and a misunderstanding of fixed wireless networks – local barriers to entry persist.

B. Fixed Wireless Operators Can Face Significant and Unnecessary Delay and Uncertainty in Local Review Processes for Base Station Sites

Fixed wireless operators face unique barriers and challenges in deploying their infrastructure in rural, suburban, and urban communities across the country. In most cases, fixed wireless networks are optimized for near-line-of-sight connectivity between transmitters and receivers, and rely extensively on access to rooftops, towers, and other medium and high elevations sites in order to improve range. This necessarily limits the locations at which fixed transmitters can be constructed – fixed broadband deployment decisions are made on a microscale; building-by-building, house-by-house, or neighborhood-by-neighborhood. In addition, unlike mobile networks, both ends of the connection are generally planned and approved at some level (permitting for the transmitter and usually a contractual agreement for the placement for the receiver).

Delays in local permitting for a transmitter can mean delays in service to hundreds of potential customers. For example, Starry’s sites are optimized to provide a signal that passes at a minimum of 12,000 to 15,000 household per three-to-six sector site. And in the event that a specific site is not approved by the local authority, a fixed wireless operator may be forced to abandon service in that particular area due to a lack of available high-elevation sites at which to place the transmitter.

We appreciate that Congress and the Commission have taken steps to help streamline the local siting process, including for small wireless facilities under Section 6409.⁸ And we note that

⁸ See 47 U.S.C. § 1455; 47 C.F.R. § 1.40001.

while the FCC has significantly streamlined wireless facility siting under Section 332,⁹ fixed wireless providers that provide only a fixed information service may not meet the necessary statutory definitions to benefit from those decisions.¹⁰

Despite the fact that many modern fixed wireless antennas can meet the requirements of Section 6409,¹¹ the local review process can continue to be lengthy, for at least three reasons. First, local governments are resource-constrained, and may not be sufficiently staffed to quickly address fixed wireless applications – even though Section 6409 establishes that the applications must be approved if they qualify.¹² Second, and related to the lack of resources, some jurisdictions are facing requests for very large mobile 5G small cell deployments, which are complicated and have a larger impact on the community, and rightly require diligent review. In these cases, smaller requests for only a few fixed wireless sites tend to be deprioritized, or the local government will develop application procedures designed to help manage their workflow.¹³ And third, some local governments may not know how to process applications for internet-only fixed wireless sites because they do not definitionally fit within existing local permitting rules that apply to personal wireless service facilities. Local governments may also not be familiar with Section 6409 or have a process in place to accept and review applications within its requirements – again, regardless of the fact that Section 6409 approves qualifying applications. The effect can be months of delay for siting a single fixed wireless base station, and the loss of service to potentially thousands of customers.

As an example, Starry estimates that if our base stations are covered under OTARD as proposed in the *NPRM*, we would be able to pass more than 1 million additional households with a gigabit-capable signal this year alone. An initial internal analysis shows that our base station permitting process takes approximately 100 days averaged across all of the markets in which we

⁹ *Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Investment; Accelerating Wireline Broadband Deployment by Removing Barriers to Infrastructure Investment*, WT Docket No. 17-79, WC Docket No. 17-84, Declaratory Ruling and Third Report and Order, 33 FCC Rcd 9088 (2018).

¹⁰ *NPRM* at ¶ 12.

¹¹ Starry's largest base stations measure 18 inches by 18 inches. *See also, e.g.*, Ubiquity PowerBeam ACGen2 and NanoStationAC Datasheets, https://dl.ubnt.com/datasheets/PowerBeam_ac_ISO/PowerBeam_AC_Gen2_DS.pdf, https://dl.ubnt.com/datasheets/PowerBeam_ac_ISO/PowerBeam_AC_Gen2_DS.pdf, https://dl.ubnt.com/datasheets/NanoStation_AC/NanoStation_AC_DS.pdf.

¹² 47 U.S.C. § 1455(a).

¹³ For example, the City of Los Angeles requires applicants to meet with City planning staff for “preapproval” before filing an application. *See* City of Los Angeles Department of City Planning, Administrative Clearance: Wireless Telecommunications Facilities, https://planning.lacity.org/Forms_Procedures/7838.pdf.

are actively deploying, which accounts for about 80% of the time to activate a site on average.¹⁴ We estimate that if our base stations are covered under the OTARD as the *NPRM* proposes, we would be able to activate 25% to 30% more sites this year, which translates to our network passing at more than 1 million additional households.¹⁵

Starry respects local governments' rights, and strives to work with local governments as their partner to bring better broadband to their communities. In fact, because we design and build our own equipment, we proactively solicited input on the design of our base stations directly from local officials in order to make our equipment as highly-concealable and as minimally-impactful on the community as possible. Ultimately, fixed wireless networks have a very small aesthetic impact on a community – we only need dozens of sites versus thousands for mobile – and can have a very big impact in terms of connecting unconnected residents or providing a new competitive force in the local broadband market. However, unintentional delays and otherwise well-meaning efforts are a significant impediment to our ability to deploy the network and bring our service to new communities.

II. GRANTING PROPERTY OWNERS THE RIGHT TO LEVERAGE THEIR PROPERTY FOR FIXED WIRELESS WILL IMPROVE BROADBAND AVAILABILITY AND COMPETITION

Fixed wireless networks tend to rely on medium-to-high-elevation sites to provide coverage in near-line-of-sight conditions across a service area. Fixed wireless operators may have limited options for locations with the appropriate height, coverage area (i.e. near the target customers), access to power, and access to fiber or the ability to add wireless backhaul to the site. And in some instances, denser networks might be deployed at lower elevations in primarily single-family home communities because only lower-elevation sites (like the chimney of a house) are available, or because of particular network architecture (like a “mesh” architecture). In all cases, the property owners should have the right to leverage their own property to bring fixed wireless to their communities.

We think of the topology of a market as an urban relief map on top of which we place our wireless fabric supported by a few points of elevation. We plan out the network in advance, and

¹⁴ Site activation begins after the site is selected and fiber pulled, and includes site preparation and site construction. Site construction includes mounting our base station (or base stations) and installing our routing and other equipment necessary to operate the site, and testing the site. Combined, these activities take on average 20 days across our active deployments.

¹⁵ Our base station sites are optimized for household coverage in dense urban areas, and modeled to cover a minimum of 4,000 to 5,000 households per base station, and 12,000 to 15,000 households per site.

target base station locations in order to maximize the number of potential customers that can be served by each, which is critical to ensuring that the capex for the build is paid back within a particular time period. We consider all of the vertical structures in an area as an opportunity to site our infrastructure and bring service to that property and the surrounding area. Our equipment is small and compact and has no negative impact (aesthetically or otherwise) on the property. We believe that the property owner should have the right to choose to place our base stations – which meets all of the OTARD requirements – on their building.

When we install a base station on a larger residential building, we also provide service to that building. So the property owner benefits twice – they may receive some payment (monetary or in kind) for the right to place our base station on the roof, and the residents receive a new competitive broadband service. The community benefits, too – once a site is constructed, we can serve residents within one-mile, 360-degree radius around the site.

There is nothing in the proposed modernization of OTARD that inhibits this right or infringes on a property owner's right to control their property. And the building owner or broader community association maintains the right to impose restrictions for safety or to preserve historic properties.¹⁶ We strongly believe that the Commission's proposed changes to OTARD would generate a significant benefit to the building owners while protecting their rights to their property.

III. THE COMMISSION SHOULD EXPAND AND MODERNIZE OTARD TO APPLY TO ANY FIXED WIRELESS ANTENNA THAT MEETS THE CURRENT SIZE RESTRICTION, REGARDLESS OF WHETHER IT TRANSMITS OR RECEIVES FIXED WIRELESS SIGNALS

The current OTARD rule, as it applies to fixed wireless antennas, is limiting without effect. Modern fixed wireless equipment is multipurpose and the same piece of equipment can be both a transmitter and receiver. For the same reasons that the FCC originally expanded the OTARD rule to cover fixed wireless receivers – to improve competition and the availability of service¹⁷ – it should evolve the rule to reflect modern technologies and network needs. Specifically, the Commission should update the rule to apply to any fixed wireless antenna so

¹⁶ 47 C.F.R. § 1.4000(b).

¹⁷ *Promotion of Competitive Networks in Local Telecommunications Markets*, First Report and Order and Further Notice of Proposed Rulemaking, 15 FCC Rcd 22983, 23030, ¶ 104 (2000) (*Competitive Networks First Report and Order*).

long as it meets the one-meter size restriction, and it should do so by deleting the word “customer” in Section 1.4000(a)(2).

We support maintaining the existing exemption for rules or restrictions that are necessary to accomplish a clearly defined, legitimate safety objective, or to preserve prehistoric or historic places that are eligible for inclusion on the National Register of Historic Places, provided such restrictions impose as little burden as necessary to achieve the foregoing objectives, and apply in a nondiscriminatory manner throughout the regulated area.¹⁸

This small rule change would have a dramatic and positive impact on the ability of fixed wireless providers to expand competitive broadband access across the country.

A. Modern Fixed Wireless Antennas are Small and Can Serve Multiple Purposes Within a Fixed Wireless Network

Fixed wireless antennas range in size, but many can meet the one meter diameter or diagonal measurement size restriction in the current rules, regardless of whether it is transmitting or receiving. Starry does not believe the Commission can or should change the existing size limitation, but we do believe that application of OTARD to receive-only antennas no longer makes sense.

Fixed wireless antennas tend to be very small and compact. Starry’s current generation base stations measure only 18 inches by 18 inches. These base stations are shrinking to approximately 18 inches by 16 inches in our second generation rolling out this year. Further, our transceivers are only 12 inches by 12 inches. Notably, both the base stations and transceivers are fully integrated – Starry does not deploy a separate external cabinet with additional equipment – it is all consolidated in the unit itself.

In addition, Starry’s current transceivers can serve as transmitters – a base station – and as receivers on a customer premises. This multi-mode functionality allows us to extend and densify our network at lower cost (the transceivers are less expensive to manufacture than our larger base stations). And it allows us to leverage an existing relationship with a property owner to make that building part of the fixed wireless network infrastructure and extend service to their community.

¹⁸ See 47 C.F.R. § 1.4000(b).

When the Commission extended OTARD to fixed wireless receivers, it drew distinctions between base stations and receivers that no longer apply.¹⁹ It is no longer the case that a provider has multiple options for where to site base stations – as described above, site location is critical to optimizing near-line-of-sight fixed networks, and providers may have few options.²⁰ And receivers and base stations may be indistinguishable in size and functionality.

Finally, with respect to potential concerns about this rule change resulting in a significant increase in the number of fixed base stations deployed, we point out that this proposed rule change is not targeted at increasing the amount of infrastructure that can be deployed in a community, but is simply focused reducing delays for deploying infrastructure that should generally be approved anyway. In a fixed network, there are far more end points – receivers – than there are transmitters, and receivers are already covered under OTARD. This rule change will improve timelines for deployment, but it will not necessarily result in any net increase in the quantity of infrastructure deployed in a community.

B. The Commission Should Avoid Line Drawing and Definitional Issues by Applying OTARD to Any Fixed Antenna Regardless of its Purpose, So Long as It Meets the Other Parts of the Rule

We strongly urge the Commission to extend OTARD to apply to all fixed wireless antennas, so long as they meet the existing one meter in diameter or diagonal measurement size restriction (and, of course, are used to receive or transmit a fixed wireless signal).²¹ As discussed above, there is a blurred line between the functionality of any fixed wireless antenna – the same antenna could be a receiver, repeater or relay, or base station. It would be impractical for the Commission to attempt to develop a single set of definitions that would govern these antennas, which would likely require updating over time.

As a practical matter, the mode of a given antenna is irrelevant. As the Commission proposed, it seeks to modernize OTARD to cover base stations and relay antennas. Since the rule would apply equally to all receivers, base stations, and relays (the three basic modes), then there is no reason to create any definitional distinction between them. The existing definition in Section 1.4000(a)(1)(ii) should remain unchanged – the rule should apply to an antenna used to receive or transmit a fixed wireless signal that is one meter or less in diameter or diagonal measurement.

¹⁹ *Competitive Networks First Report and Order*, 15 FCC Rcd at 23034, ¶ 114.

²⁰ *Id.*

²¹ 47 C.F.R. § 1.4000(a)(1)(ii).

C. OTARD Can be Enhanced and Modernized by Deleting the Word Customer in the Definition of Fixed Wireless Signals

We suggest the Commission make as few changes as possible to the existing OTARD rule, and effectuate its proposal by simply deleting the word “customer” in the definition of fixed wireless signal in Section 1.4000(a)(2).²²

While fixed wireless base stations and relays can be located on a customer premises, they may also be located on any vertical infrastructure that might be available within the target service area. As discussed, fixed wireless operators tend to optimize their networks to provide coverage to identified potential customers, and have a limited number of options for the vertical assets on which they can place base stations or relays. In some cases, sites may be placed on a building or structure for which the owner is effectively a customer. But in others, a fixed wireless operator may have to install the base station or relay on a freestanding mast, traditional macro tower, water tower, or other site with appropriate elevation. Antennas placed at these sites should not be excluded simply because the provider is unable to make the owner of that site a “customer.”

If the Commission were to limit the application of the rule to base stations or relays deployed only on “customer” sites, it would necessarily be prioritizing one type of network topology over all others – specifically deployments that rely on a larger number of lower elevation base stations and relays deployed in exclusively residential area.²³ It would also have the greatest impact on more suburban communities than rural or urban. In a more rural setting, the network may rely on a few high elevation sites to maximize coverage where homes have a greater distance between them. And in urban settings, commercial office buildings or other non-residential structures are frequently at higher elevation than most residential buildings, offering a better opportunity to host base stations or relays. These sites play a critical role in the fixed wireless infrastructure ecosystem, and they should be afforded the same process under OTARD.

IV. CONCLUSION

We strongly support the Commission’s proposal to extend OTARD to cover any fixed wireless antenna that meets the existing size restriction, while maintaining the rights of state and local governments and home owners’ associations to adopt reasonable restrictions to achieve a

²² *Id.* § 1.4000(a)(2).

²³ *NPRM* at ¶ 8.

safety objective or preserve historic properties. This rule change will improve broadband connectivity in urban, suburban, and rural area across the country, and empower property owners to help improve broadband in their own communities.

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